

ACADEMY

NEWSLETTER OF THE CALIFORNIA ACADEMY OF SCIENCES

HOME OF
STEINHART
AQUARIUM
MORRISON
PLANETARIUM
NATURAL
HISTORY
MUSEUM

MEMBERS MEETING

The Last Day of *Tyrannosaurus Rex* and the Morning After

With Dr. William Clemens,
Academy of Sciences President & Fellow

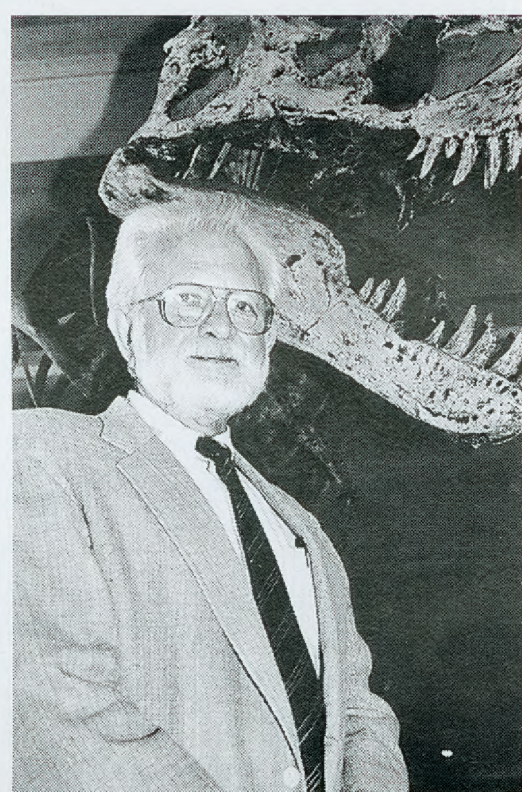
What caused the extinction of most of the dinosaurs some 65 million years ago has been a subject of speculation and scientific study. The problem is not simple since some groups became extinct while others flourished during this interval in Earth's history.

In a slide-illustrated lecture, professor William A. Clemens will draw together evidence from many groups of plants and animals that documents what happened before, during and after this period of mass extinction. Bring your own favorite theory of what caused the demise of the dinosaurs and test it with new information from sites such as eastern Montana and the north slope of Alaska.

Clemens is a vertebrate paleontologist and teaches in the department of integrative biology at U.C. Berkeley. He is the president of the Academy of Sciences and an Academy fellow. Most of his research has focused on the evolution of the mammals that were the contemporaries of the dinosaurs. Currently he is studying the evolution of animals and plants during the first million years after most of the lineages of dinosaurs became extinct.

Wed., Dec. 11 — 2 p.m. & 7:30 p.m.

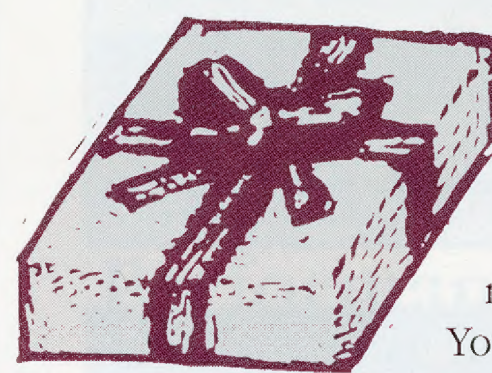
This program is a benefit of membership. Please present your membership card at both the front entrance and the auditorium. Members' guest passes can be purchased for \$10 each for adults and \$5 for children. Please note: only the main entrance will be open for members lectures. Call (415) 750-7111 for more information.



Dr. Clemens will discuss the theories of the dinosaurs' extinction.

Reciprocal Museum Admissions

As members of the Academy of Sciences you can enjoy free admission to more than 200 science centers and aquariums. The membership office recently updated the list of participating institutions. To get a current copy, stop by the membership booth on your next visit.



Members' Holiday Shopping Evening

Join us for an evening of shopping, light refreshments and some traditional holiday piano music.

You'll have the opportunity to purchase ethnic art gifts, fabulous jewelry, books, audios, videos, T-shirts

and toys without the crowds, and also receive a special member's discount of 15 percent on all purchases in the Academy Store (usually 10 percent).

The Academy Store will wrap your store-purchased gifts with complimentary gift wrap using beautiful recycled materials. Take home an extra gift, a complimentary 1995 Run to the Far Side T-shirt (large only), after making \$25 in purchases from the store.

As an added bonus this year, the Academy's staff joins the festivities by presenting their exquisite handmade jewelry, candles, cards, hats, ornaments, scarves and more, to enhance your holiday shopping pleasure.

If you missed the opening preview of "The Dinosaurs of Jurassic Park," this will be an excellent time to see the exhibit. The Dino Store will be open for purchasing dinosaur models and toys for the dinosaur lovers in your family. In addition, you won't want to miss the 7:30 p.m. members lecture about the life and times of *T. rex*.

Wed., Dec. 11 — 6 p.m. to 9 p.m.

A Great Gift Idea!

Buy One Membership, Get the Second for Half Price

The Academy has a spectacular gift idea for you. When you buy one gift membership, you get a second membership for half price!

These gift memberships for the Academy of Sciences begin the moment they're opened, and last all year. Giving a membership reflects not only your thoughtfulness and good taste, but your understanding and appreciation of the natural world as well.

To take advantage of this offer, all memberships must be at the \$60 level, either in the family or grandparent category, can only be purchased at the Academy membership booth and are available for new memberships only. This special promotion begins on Thanksgiving Day and continues through Christmas Day. Each gift membership includes an attractive gift card outlining all the Academy benefits, plus a space for your message and signature.



Give a gift that is educational, fun and engaging all year long.

If you haven't seen it yet, or you want to bring your friends to see it again, now is your chance to see "The Dinosaurs of Jurassic Park" exhibit before it closes Jan. 5.

The exhibit combines the models and props used in Steven Spielberg's film, *Jurassic Park*, with actual dinosaur fossils and video clips from the movie. Compare what scientists know about dinosaurs, versus the way artists and filmmakers have portrayed them. Test your prehistoric knowledge with computer games and fossil displays, including real fossilized amber with trapped insects millions-of-years old. Be sure to see the most accurate life-size model to date of a nearly 40-foot-long *Tyrannosaurus rex* in the main entry hall (it's so big, it didn't fit into Wattis Hall with the rest of the Jurassic Park exhibit!).

The Academy of Sciences would like to thank the exhibit's supporting sponsors, **Franklin Templeton Group** and **FAO Schwarz**. The exhibit was produced and organized by The Dinosaur Society, a non-profit organization dedicated to dinosaur science. It was made possible through generous loans of casts, sets and props from Amblin Entertainment and MCA/Universal Pictures.

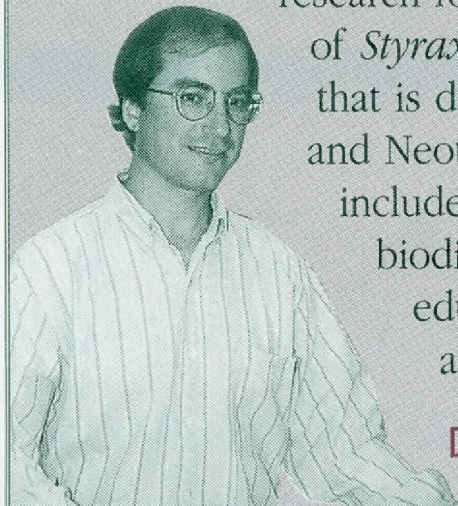
SEE "THE DINOSAURS OF JURASSIC PARK" BEFORE IT CLOSES

Get up close to a giant *T. rex* in the main entrance hall.



Academy Welcomes New Curator

The Academy's research division welcomes a new assistant curator of botany, Dr. Peter Fritsch. Fritsch joined the department in May after completing a postdoctoral fellowship at Duke University. He received his Ph.D in 1994 from Rancho Santa Ana Botanic Garden program. His current research focuses on the taxonomy and phylogeny of *Styrax* (Styracaceae), a flowering plant genus that is distributed in the Northern Hemisphere and Neotropics. Fritsch's long-term goals include continuation of his research on plant biodiversity and evolution, as well as public education on general plant science and conservation.



Dr. Peter Fritsch, new assistant curator of botany.

ACADEMY STORE

New Far Side Holiday Greeting Cards

Gary Larson is back with more season's greetings cards from The Far Side. These holiday cards represent the *only* new cartoons that Larson has published since retiring, and he hasn't lost his legendary off-kilter sense of humor. This year the fir trees are frightened, Santarantula is on the move and the spider family has left a special treat for Santa. Only Larson can capture the spirit of the Christmas season in such a humorous and fun way. The Academy Store has individual cards and boxed sets priced from \$1.75 per card or \$10 per box.



JUNIOR ACADEMY

Water World on the WWW

Sign on to the Internet where you'll find oceans of information about fish, marine mammals and other creatures of the sea. With Academy librarian Anne Malley's assistance, you'll explore ocean environments, visit other aquariums, and learn how to take care of ocean pets — all from the comfort of a computer.

Fri., Dec. 27 — 9 a.m. to noon
Ages 13 to 16 years; \$25

Fish Facts

Meet the denizens of the deep! Steinhart Aquarium will be our resource as we investigate the physiology, behavior and adaptations of ocean fishes. You'll play games and do hands-on activities to learn about the life cycle of a fish with instructor Soncie Veil.

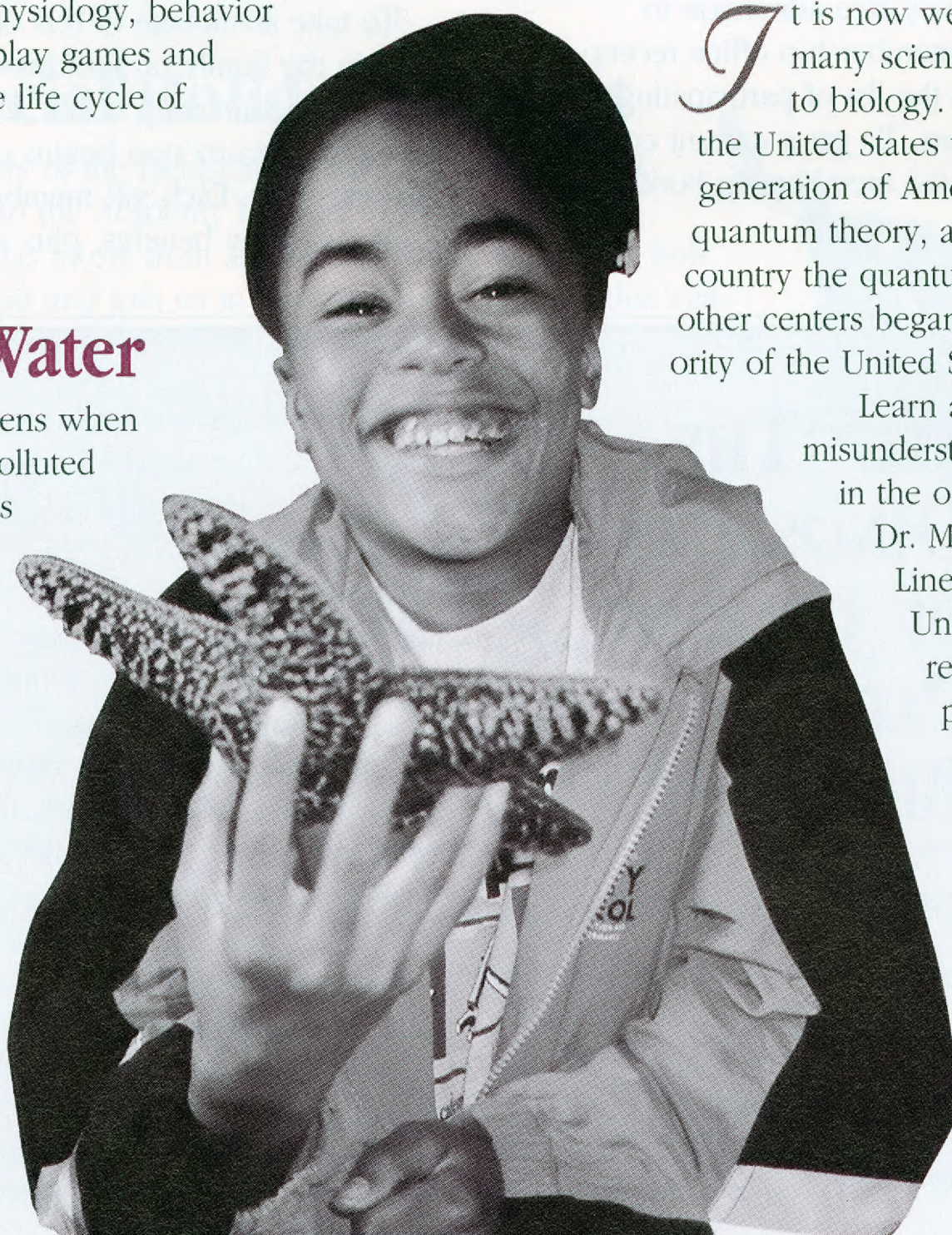
Sat., Dec. 28 — 1 p.m. to 3 p.m.
Ages 6 to 8 years; \$20

The Chemistry of Water

Dip into the world of water: What happens when chemicals dissolve in water? How can polluted water be cleaned? How do some animals skate across water? Why do some plants float and others sink? We'll answer these questions and more through experiments, games and observations in the Steinhart Aquarium with the help of the Academy's educator Kellyx Nelson.

Fri., Jan. 3 — 1 p.m. to 4 p.m.
Ages 9 to 12 years; \$25

It's not too late to sign up for winter holiday workshops at the Junior Academy for kids 6 to 16. Please use the education catalog for registration and for other class listings, or sign up for the above classes using the newsletter order form. Call (415) 750-7100 for more information.



Kids explore marine life at the Junior Academy.

Malaria: Past Nemesis, Continuing Plague

Malaria is the quintessential tropical disease — mysterious, exotic, dangerous, widespread and medically challenging. It remains a well understood, yet largely unsolved problem, growing in frequency and concern, with its elimination questionable, if at all possible. Instructor Dr. Donald Heyneman will review the epidemiology and life history of the malarial parasites of humans, the relationship of life cycle to symptoms caused, the nature of the pathology induced, drug resistance and the prospects of developing an effective vaccine.

Tue., Dec. 10 — 7 p.m. to 9 p.m.
Cost: \$12 members/\$15 nonmembers

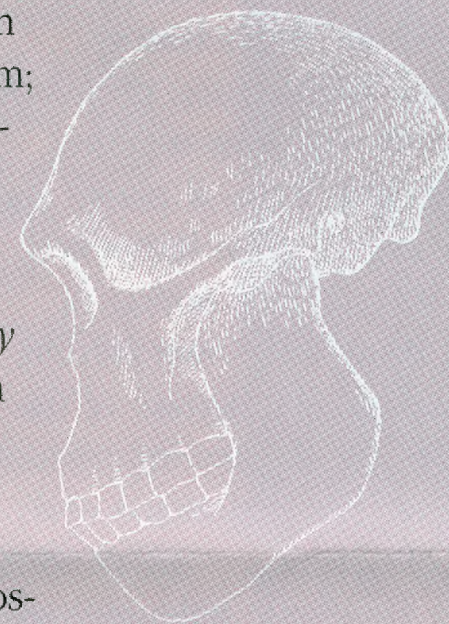


From Lucy to Language

Join American paleontologist Dr. Donald Johanson (well known for his discovery of Lucy, a 3.2 million-year-old hominid skeleton from Ethiopia) for an exploration of dozens of issues and controversies surrounding human origins. He'll discuss our genetic similarity to our closest living relatives, African apes; what early humans looked like; *Homo's* probable beginnings in Africa and migrations therefrom; and the latest evidence regarding hominid lifestyles, diet, shelter, art and burial practices.

His latest book, *From Lucy to Language*, co-authored with the Academy's Blake Edgar of *Pacific Discovery*, contains the fullest systematic survey to date for the nonspecialist of fossil hominids. A book-signing by Johanson and Edgar will follow the lecture.

Tue., Dec. 17 — 7:30 p.m.
Cost: \$6 members/\$10 nonmembers



Privilege

Dr. Geerat (Geologists are ongoing ancient identifying them sighted colleague As he explor old, he is able to foundation for th findings show th armor to protect have now develo fortresses.

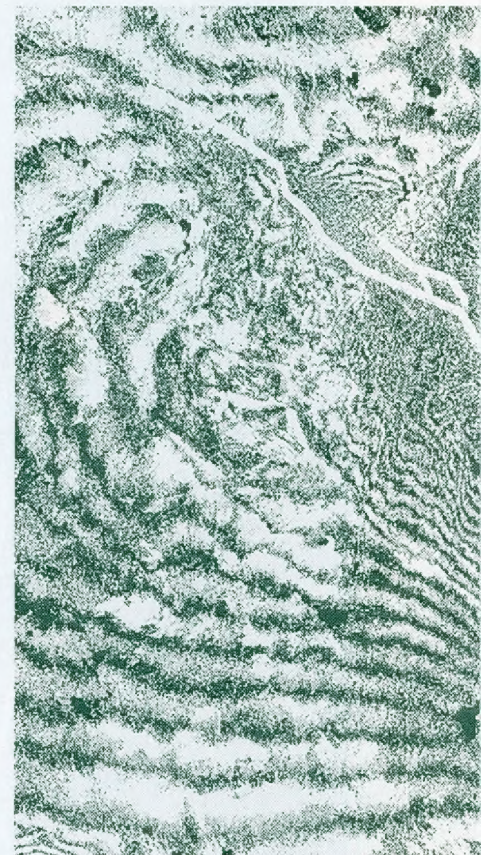
A professor a a fellow of the A Ver-MAY) is the e numerous awards: A book-signing o *Hands: A Scienti Wed., Jan. 22 — Cost: \$6 members Discover the natural world speaking on a variety of (415) 750-7128.*

The Strange Way Quantum Theory Came to the U.S.

It is now well known that quantum ideas play a central role in many sciences, from physics to astronomy, from material science to biology. In the first 25 years of this century, quantum theory in the United States was a scientific and educational stepchild. Later, a new generation of American scientists was given the opportunity to learn quantum theory, and together with a number of immigrants, made this country the quantum and scientific center of the world by 1950. By 1980, other centers began to rival the scientific superiority of the United States.

Learn about the great confusion, misunderstandings and misconceptions in the origin of quantum notions with Dr. Max Dresden of the Stanford Linear Accelerator and the State University of New York. His research includes particle physics, statistical mechanics, black holes, quantum field theory, superconductivity, mathematical physics, cellular automater and the history of quantum theory.

Tue., Dec. 10 — 7:30 p.m.
Tickets: \$3 each



On Dec. 18, learn how satellite technology can help u California 1992 earthquake, can help u

Evolution and the Human Body

Just like other creatures, we are the products of a long evolutionary history. The architecture of our bodies was not shaped overnight; rather it is a product of natural selection working on the existing template of the body of our ape ancestor. The design of our bodies is far from perfect, as evidenced by the human legacy of lower back pain, easily injured knees, fallen arches and readily dislocated shoulders. In this course, the Academy's Anthropology Chair Dr. Nina Jablonski will discuss the evolution of the human musculoskeletal system, and how the process of evolution shaped both its strengths and weaknesses.

Jan. 7 & 14 (2 Tue.) — 7 p.m. to 9 p.m.
Cost: \$25 members/\$35 nonmembers

To register and for more information on these and other classes, contact the adult and family education program at (415) 750-7100.

LECTURES

ed Hands: A Scientific Life

ry) Vermeij, blind since the age of 3, is one of the foremost evolutionary paleontologists in this country and is well-known for his theories about the arms race among mollusks. His ability to feel differences among shells, quickly down to the level of subspecies, allows him to "see" much more than his

s and compares the shells of modern day species to fossils millions-of-years reconstruct their history through the broken and mended armor. Setting the emerging field of paleoecology, Vermeij's mollusks appear to have evolved rugged their delicate flesh, just as their predators bed more vicious weaponry to crack these

the University of California, Davis, and ademy of Sciences, Vermeij (pronounced ditor of *Evolution*, and has received including the MacArthur fellowship. his new autobiography, *Privileged e Life*, will follow the lecture.

7:30 p.m.
\$10 nonmembers

through Special Lectures, which feature authors and experts natural history topics. Please use order form for tickets, or call



Dr. Gary Vermeij displays a collection of shells, with daughter Hermine and wife Edith.

Y LECTURE

Measurement of the Earth's Tectonic Motions From Spaceborne Satellites A Special B. Dean Astronomy Lecture

The Earth's surface is composed of about a dozen large plates, each floating on the interior mantle and in constant motion. While the relative speed of the plates is very small, the tremendous forces involved result in the building of mountain ranges and other geologic features. We are most aware of the strains accumulating in the crust when the rocks deform or slip past each other catastrophically, causing earthquakes. Recent advances in space satellite technology, such as the Global Positioning System and synthetic aperture radar (SAR) interferometry, now enable us to observe plate motions with such sensitivity and over wide enough areas that it may be possible to measure strains accumulating before the earthquakes occur.

Dr. Howard A. Zebker, associate professor of geophysics and electrical engineering with Stanford University, will explain the new measurement technologies and the goal of current research that may lead to a more complete understanding of the hazard potential we live with each day in California. This lecture is presented in cooperation with the American Geophysical Union.

Wed. Dec. 18 — 7:30 p.m.
Tickets: \$3 each

For advance tickets, use the newsletter order form. Tickets may be available at the door on a standby basis. Call (415) 750-7127 for more information. This concludes the fall 1996 B. Dean Astronomy Lecture Series.



ay, like this radar image of the Landers, observe the Earth's movements.

Bank of the West Bear Awarded New Home

The raffle winners of the Bank of the West bear was the Meharg family, longtime members of the Academy of Sciences. Bank of the West donated the bear as part of their sponsorship of the "Bears: Imagination and Reality" exhibit. In early September, Bunne Pardini, membership recruiter, presented the bear to Zoe, Livia and Phoebe, pictured above with the Bufano bear sculpture in the background.



Sherry Bridgman

YOUNG AUDIENCES

Golden Bough Winter Holidays Performance

Dressed in Dickens-style costumes, Golden Bough performs a family show comprised of songs of Christmas, Hanukkah and winter. This accomplished trio, specializing in traditional and original acoustic music, has become a popular group on both sides of the Atlantic. Rooted in Celtic, European and American folk traditions, they have expanded on these styles to create a refreshing contemporary sound that is unique. Paul Espinoza, Margie Butler and Florie Brown blend their voices in two- and three-part harmony, to the accompaniment of an array of acoustic instruments including: Celtic folk harp, violin, viola, guitar, mandolin, recorder, tin-whistle, accordion, harmonica and *bodhran* (traditional Irish drum).

Sun., Dec. 15 — 1 p.m.

This one-hour family series presented by Young Audiences is free after general admission through a grant from the San Francisco Grants for the Arts and is presented in the auditorium. Call (415) 750-1719 for more information.



Enjoy holiday folk traditions by Golden Bough.

★ PLANETARIUM ★

The Christmas Star

A tour of the winter sky reveals many seasonal wonders overhead, including classic examples of the birth and death of stars. After a look at celestial sights, an exploration of another heavenly object that is often associated with Christmastime — the legendary "Star of Bethlehem" — reveals what that object may or may not have been. This holiday favorite opens Dec. 6 and runs through Jan. 5. It plays at 2 p.m. weekdays and 2 p.m. and 4 p.m. on weekends.



DECEMBER SKY SHOWS

The Planetarium will be CLOSED Dec. 2-5 for show changes.

Sky Show/Description	Weekday	Weekend
The Christmas Star seasonal wonders (opens Dec. 6; closes Jan. 5)	2 p.m.	2 & 4 p.m.
Other Worlds planets beyond our solar system	—	1 & 3 p.m.
Neighbors in Space a family show	—	11 a.m.
StarTalk a tour of the night sky	—	noon

Although there will be no shows on Christmas Day, Wed. Dec. 25, there will be an extended weekday schedule from Thu., Dec. 26 through the following week Fri., Jan. 3. Tickets can be purchased one-half hour before the show at the box office once inside the Academy of Sciences (\$2.50 adults/\$1.25 for youth and seniors). Members must redeem their passes for tickets at the box office prior to the show. For more information, please call (415) 750-7141.

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

- 1 **Sunday**
12th Annual Run to the Far Side,
8:30 a.m. start
- 2 **Monday**
The Planetarium is closed
through the 5th for sky
show changes
- 6 **Friday**
The Planetarium reopens with
"The Christmas Star," 2 p.m.
(Sky Show)
- 7 **Saturday**
The Art of Fencing, 1 p.m.
(Traditional Arts)

Special Holiday Concert,
2:30 p.m. to 3:30 p.m.
(Traditional Arts)
- 10 **Tuesday**
The Strange Way Quantum
Theory Came to the U.S.,
7:30 p.m. (Astronomy Lecture)
- 11 **Wednesday**
The Last Day of *Tyrannosaurus*
Rex and the Morning After,
2 p.m. & 7:30 p.m.
(Members Meeting)

Members Holiday Shopping
Evening, 6-9 p.m.
(Members Event)
- 14 **Saturday**
Filipino Puppets, 1 p.m.
(Traditional Arts)
- 15 **Sunday**
Golden Bough Winter Holidays
Performance, 1 p.m.
(Young Audiences)
- 17 **Tuesday**
From Lucy to Language,
7:30 p.m. (Special Lectures)
- 18 **Wednesday**
Measurement of the Earth's
Tectonic Motions From
Spaceborne Satellites, 7:30 p.m.
(Astronomy Lecture)
- 27 **Friday**
Water World on the WWW,
9 a.m. to noon (Junior Academy)
- 28 **Saturday**
Fish Facts, 1 p.m. to 3 p.m.
(Junior Academy)

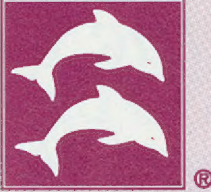
FUTURE DATES TO REMEMBER

Jan. 3, The Chemistry of Water (Junior Academy); **Jan. 5,** The Dinosaurs of Jurassic Park" exhibit closes; **Jan. 11,** Geology of Gems, with Jean DeMouthe (Members Meeting); **Jan. 22,** Privileged Hands: A Scientific Life (Special Lectures); **Jan. 28,** Conservation Through Compromise: Learning to Live With Wildlife (Wildlife Talks Series); **Feb. 11,** Wolves, with Rick McIntyre.

VISITOR INFORMATION

Special Exhibitions: "The Dinosaurs of Jurassic Park," through Jan. 5; "Birds and Beasts of Ancient Latin America," through Jan. 1; "Folk Toys: The Playful Arts of Japan," through June 1997. • **Feeding Times:** Fish Roundabout, 2 p.m.; Penguins, 11:30 a.m. & 4 p.m. • **Guided Tours:** Free one-hour high-light tours daily. • **Laserium Shows:** Thu.-Sun. evenings. • **Free Day:** First Wed. of each month. • **Hours:** Open every day of the year. Winter hours 10 a.m.-5 p.m. Summer hours (Memorial Day weekend to Labor Day) 9 a.m.-6 p.m. • **Information:** Hotline (415) 750-7145, World Wide Web site <http://www.calacademy.org>

California
Academy
of Sciences



California Academy of Sciences
Golden Gate Park
San Francisco, CA 94118-4599

Address Correction Requested
TIME-DATED MATERIAL

ORDER FORM

Nonprofit Organization
U.S. Postage Paid
Permit No. 3565
San Francisco, CA

B. DEAN ASTRONOMY LECTURE SERIES	Quantity	Total	THE WILDLIFE TALKS SERIES
The Strange Way Quantum Theory Came to the U.S. / Dec. 10	_____ X \$3	= _____	Please see the September issue, or call (415) 750-7128 for information.
Measurement of the Earth's Tectonic Motions From Spaceborne Satellites / Dec. 18	_____ X \$3	= _____	
SPECIAL LECTURES	Qty/Members	Qty/Nonmembers	Total
From Lucy to Language / Dec. 17	_____ X \$6	_____ X \$10	= _____
Privileged Hands: A Scientific Life / Jan. 22	_____ X \$6	_____ X \$10	= _____
JUNIOR ACADEMY	Qty/JA Members	Total	
Please first call (415) 750-7100 for availability.			
Water World on the WWW / Dec. 27	_____ X \$25	= _____	
Fish Facts / Dec. 28	_____ X \$20	= _____	
The Chemistry of Water / Jan. 3	_____ X \$25	= _____	
			DONATIONS
			<input type="checkbox"/> I would like to support the Academy of Sciences with a donation. \$ _____

TOTAL PAYMENT ENCLOSED \$ _____ ☐ Check (make payable to CAS)

☐ Visa ☐ MasterCard ☐ American Express (\$10 minimum on credit card orders)

Card Number _____ Exp. Date _____

Daytime Phone _____

Mail payment and order form to: Membership Office, Ticket Services, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118-4599

Include a self-addressed, stamped envelope for each series to which you subscribe. No refunds/exchanges.

671

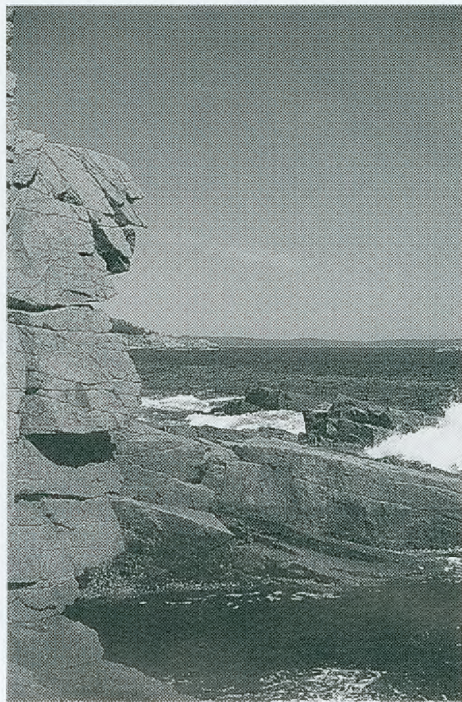
ACADEMY TRAVEL

CANADA'S
MARITIME
PROVINCES:
The Bay of
Fundy and
Coastal
Maine

With less than 100 other passengers aboard the yacht-size *M.V. Nantucket Clipper* you'll delight in the pure scenic splendor of Maine's Acadia National Park, an island parkland of windswept cliffs, northern spruce and hardwood forests, and crystalline glacial lakes. You'll whale watch in the waters of Jeffreys Ledge and in the Bay of Fundy, whose nutrient-rich waters attract humpback, fin, minke and right whales. Discover the pastoral beauty of Cape Breton Island, with its Scottish, Irish and French Acadian influences. There will be opportunities to join Academy Entomologist Dave Kavanaugh and the ship's naturalists for expeditions ashore.

Aug. 30 to Sep. 13
Cost: \$3,800-\$6,300, plus air

Cost is per person, based on double occupancy. For more information on this and other Academy staff-led tours, please call (415) 750-7348.



Rocky Coast, Bay of Fundy, Maine

TRADITIONAL ARTS

The Art of Fencing

Modern day fencing derives from the medieval European tradition of sword dueling. George Platt of the Sword Play Fencing Academy, presents a lecture and demonstration on the history and evolution of fencing.

Sat., Dec. 7 — 1 p.m. to 2 p.m.



George Platt

Filipino Puppets

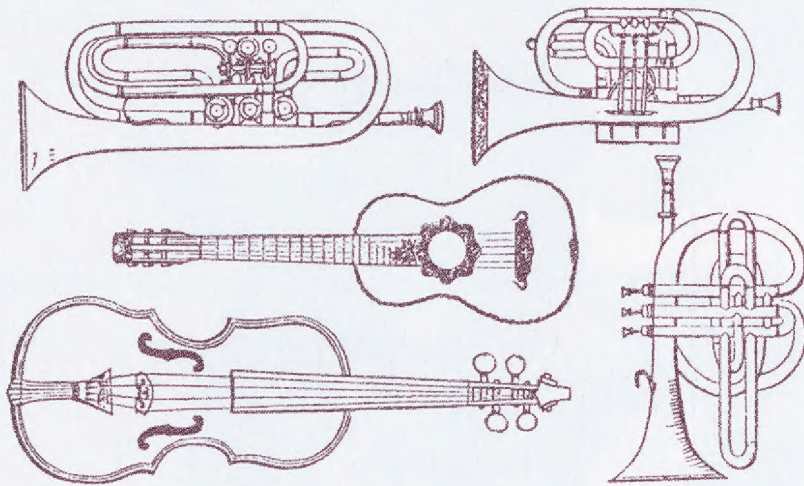
Teatro ng Tanan (TnT) is a community-based Filipino theater and cultural arts performance group in the San Francisco Bay area. Inspired by the Higites Festival in Angono Rizal, Philippines, TnT has created 13 giant puppets based on Filipino myths, legends and heroes. Members of the theater group will present a short play and then display the puppets for people to view.

Sat., Dec. 14 — 1 p.m. to 2 p.m.

Special Holiday Concert

Members of the Deutscher Musik Verein brass band return to the Academy for their annual concert of Christmas music from around the world. Get in the holiday spirit and join us in a multicultural program that celebrates the joyous sounds of the season.

Sat., Dec. 7 — 2:30 p.m. to 3:30 p.m.



TnT presents a Filipino cultural arts play with 13 giant puppets.

Explore cultural traditions from around the world in these one-hour presentations held Saturdays in the auditorium. Free after general admission. Call (415) 750-7165 for more information.

WHOMTOCALL ☎ Academy Info, 750-7145 • Academy Store, 750-7410 • Aquarium, 750-7247 • Biodiversity Center, 750-7361 • Development Office, 750-7216 • Docent Tours, 750-7155 • Education Office, 750-7100 • Group Admissions, 750-7159 • Job Hotline, 750-7333 • Laserium, 750-7138 • Special Lectures, 750-7128 • Library, 750-7102 • Membership Office, 750-7111 • Planetarium, 750-7141 • Planned Giving, 750-7216 • Receptionist, 221-5100 • Security, 750-7000 • Travel, 750-7348 • Volunteer Services, 750-7154 • Weekend Information, 750-7375

© 1996 California Academy of Sciences — EDITOR, Sheri Ketchum / LAYOUT, Johanna Dimayuga / PRINTING, Fruitridge Printing & Lithograph Inc. Printed on recycled paper with soy-based ink.

DEDICATED TO SCIENTIFIC RESEARCH & EDUCATION, INSPIRING RESPECT FOR THE NATURAL WORLD